



# CHELAN-DOUGLAS HEALTH DISTRICT

200 Valley Mall Parkway, East Wenatchee, WA 98802

Personal Health: 509/886-6400 • FAX 886-6478

Environmental Health: 509/886-6450 • FAX 886-6449

Mail: P.O.Box 429, Wenatchee, WA 98807-0429

## PRIVATE WATER SYSTEMS

As a part of the process for obtaining a permit for an on-site sewage disposal system, you will need to demonstrate that you have access to an adequate, potable water supply. If you are developing your own water system, as opposed to connecting to an existing, approved public water supply, these are the issues you will need to address.

**QUANTITY:** The State Department of Health has established a flow of 400 gallons per day as the minimum acceptable volume of water for an individual residence. This will allow adequate water for domestic use. It is NOT enough for lawn and garden irrigation. Four hundred gallons per day means a little less than one-third gallon per minute if that amount can be pumped for 24 hours and if all water produced is saved. If the well or spring has minimal flows, then storage should be provided for periods of higher water use within the house. This can be a spring box or a small reservoir with a second pump and pressure tank. If the water source can sustain a flow of over fifteen gallons per minute, storage is not normally needed for domestic use. However, if the house has multiple bathrooms, or if lawn and garden watering is planned, you may want storage to assure higher flows during peak use.

To determine if the well will produce at least 400 gallons per day, your well log must show that the pump, bailer or air test was run long enough to remove at least 400 gallons PLUS the well storage within 24 hours. Well storage is the amount of water that was in the well before pumping began. Well storage is calculated by multiplying the depth of the water standing over the pump (the distance between the static water level and the pump depth) time 1.44 gallons per foot for a six inch well diameter. For other diameters, the gallons per foot equals 0.04 times the square of the diameter in inches.

If the test was not run long enough to withdraw this volume, another pump test will be necessary.

**QUALITY:** Water can contain many contaminants which, in large enough quantities, can be harmful to human health. You will need to collect water samples for testing at a certified laboratory. At a minimum, you will need to have the water tested for coliform bacteria, and for Nitrate. Sample bottles are available at the Health District. Be sure to specify whether you are testing for bacteriological quality or nitrate content or both when you pick up the sample bottles.

Coliform bacteria are found in intestinal contents and in contaminated soils. Usually coliform bacteria will not cause illness but their presence is an indication that contamination is entering the water system. Nitrates are found in fertilizers, sewage, and other products of organic breakdown. Common sources of nitrates in ground water supplies are seepage from agricultural sites or contamination from sewage systems. In

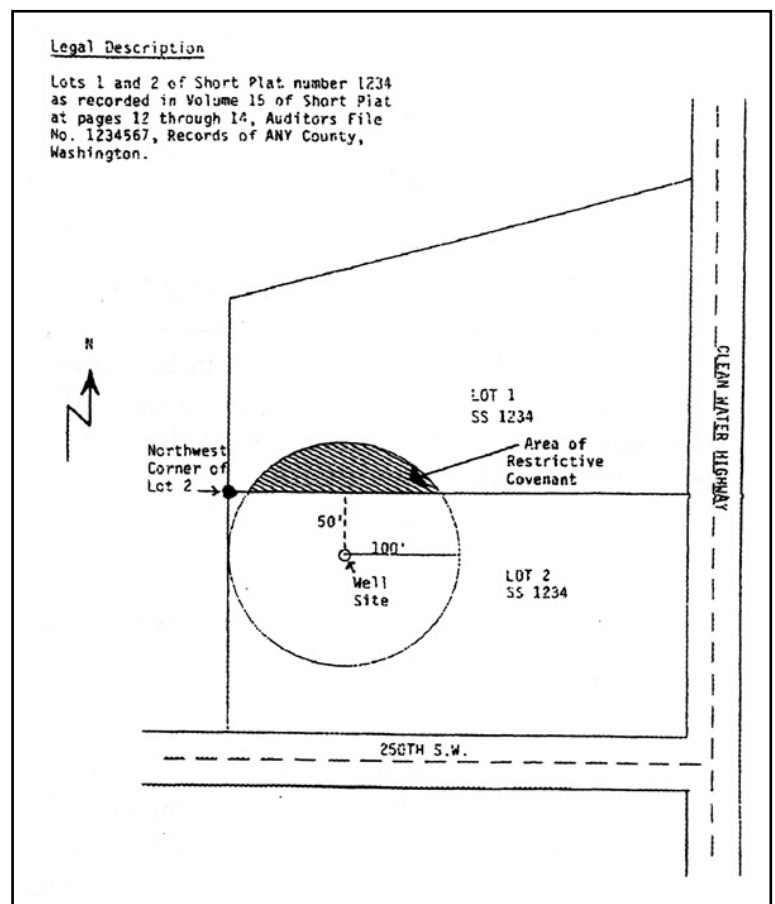
newborn infants an excess of nitrates can cause a condition known as methemoglobinemia, or "blue baby syndrome".

If your water contains either coliform bacteria or excessive nitrates, treatment may be necessary. Each instance will require an individual solution. Please consult the Health District Sanitarian who works in your area for assistance.

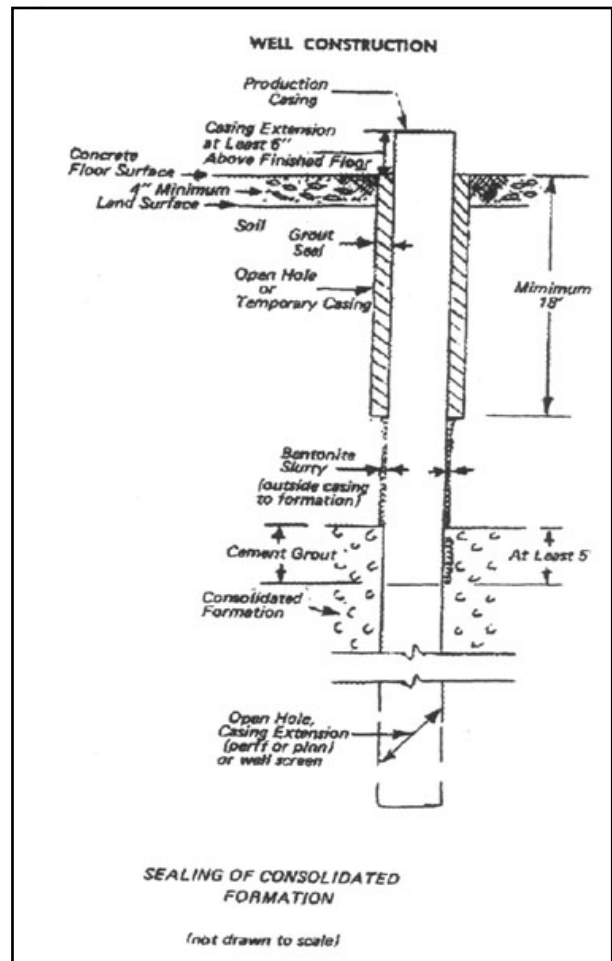
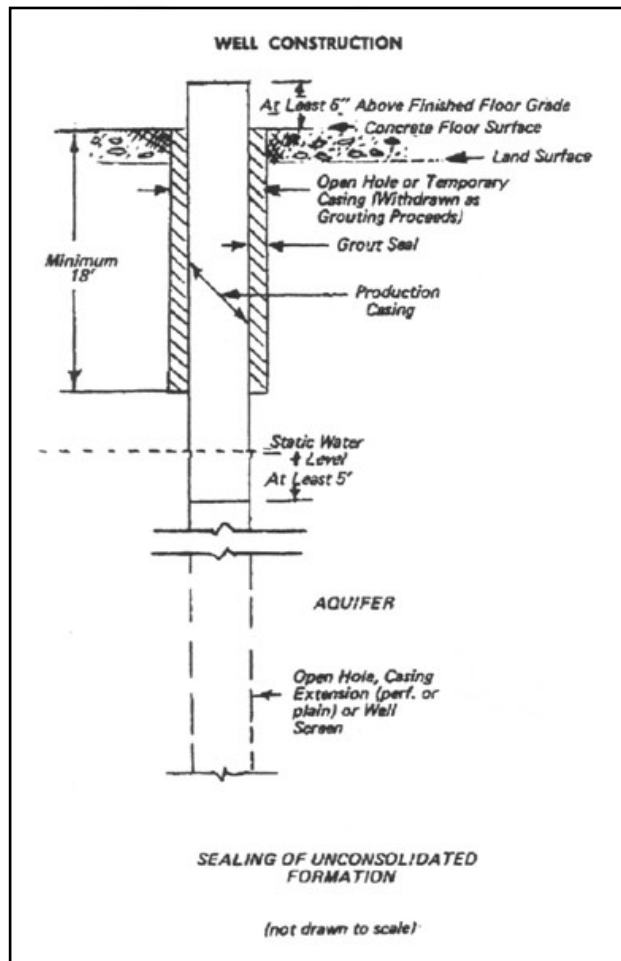
## STANDARDS FOR WELLS

**LOCATION:** Your well must be located where it can be protected from contamination, and where you can control the land uses around it. Normally, this means that you need to control use of the land for at least 100 feet in all directions from the well. If a well is located at least 100 feet from all property lines, you have full control of the land uses around it. However, if your property size or shape, or the location of an existing well places part of this 100ft radius circle off of your property, you will need to obtain restrictive covenants from each of the adjoining property owners. The landowner would be able to conduct most activities within the restricted area. He would simply agree to limit the land use to non-polluting uses. Some of the polluting uses he would agree to avoid include the installation of sewage systems, construction of barns, pig pens, storage of pesticides, or installation of underground fuel tanks. A model form for a restrictive covenant is available at the Health District office.

**CONSTRUCTION:** The Department of Ecology has published construction standards for wells. These apply to both new wells and to existing wells that are being put to new uses such as to supply water to a new home. If you are developing a new well, the licensed well driller is responsible for constructing the well to these standards. If you are using an existing well, compare the well to these standards and make any necessary corrections. A common type of unapprovable construction is the use of an improperly drained pit to contain the well, pump and pressure tank. This is not acceptable. The well casing must extend at least six inches above the original ground



surface and be capped with a sanitary seal. To continue to provide frost protection, you can install a pitless adapter. If the well is dug rather than drilled, other things to check are the grouting between well rings and the tightness of the cover. Non-submersible pump motors, pressure tanks and other equipment must be located outside the casing, in areas not subject to flooding or condensation.



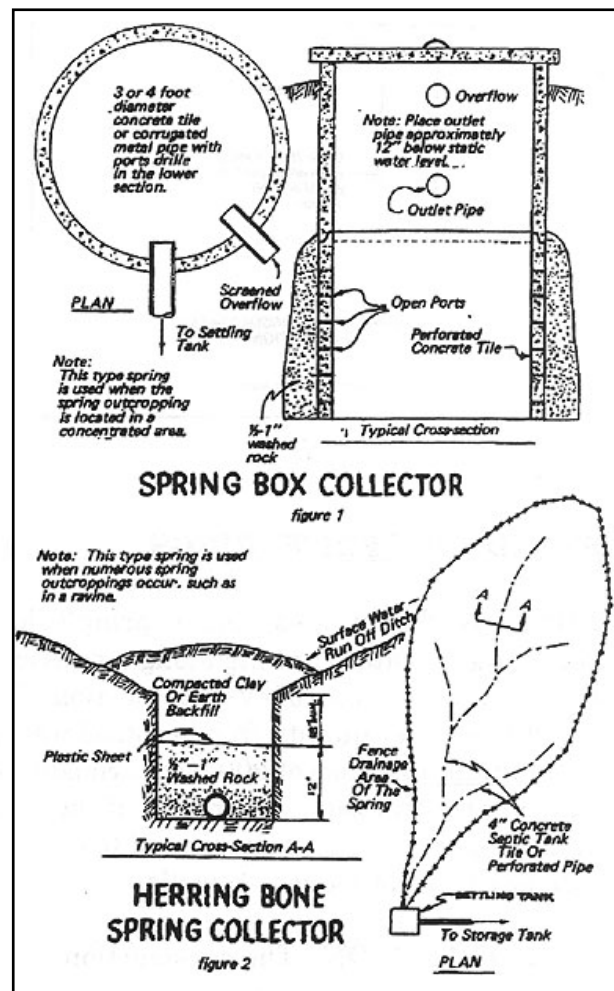
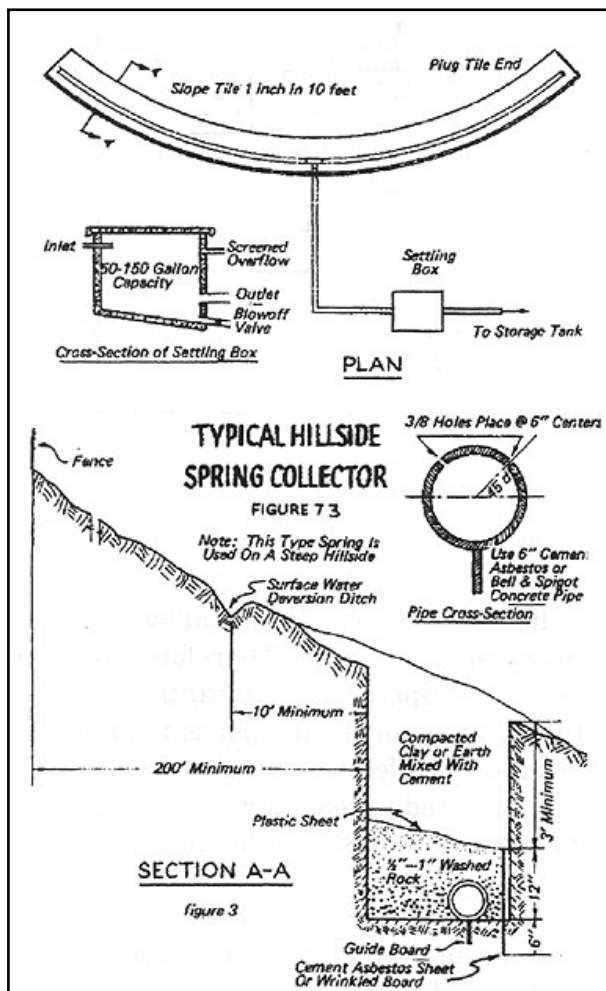
## STANDARDS FOR SPRINGS

**LOCATION:** Unlike a well, a spring is located where natural conditions allow the surfacing of water running along a restrictive subterranean strata. Therefore, you have much less control over its location. The presence of upstream pollutants can affect the water quality from a considerable distance. Control of the upstream area for a minimum distance of 200 feet is considered the smallest effective distance for a sanitary control zone. Therefore, if the spring is not located at least 200 feet within your property lines, you will need to obtain restrictive covenants such as those discussed in the section on wells.

**CONSTRUCTION** The construction measures taken to protect a spring must be tailored to the geological conditions. The basic features of spring protection are:

- A. An open-bottom basin with watertight sides which intercepts the water source, or a system of collection pipes and a storage tank,
- B. A cover that prevents the entrance of surface drainage, debris, rodents and insects into the storage tank,
- C. Provision for emptying and cleaning the tank,
- D. Provision for overflow, and
- E. Connection to the distribution system.

A collection tank is usually constructed in place with reinforced concrete. The tank should be large enough to enclose or intercept as much of the spring as possible. When a spring is located on a hillside the downhill wall and sides should extend to bedrock or a depth that will ensure maintenance of an adequate water level in the tank. The lower portion of the uphill wall of the tank may be constructed of stone, brick, etc. placed so that water may move freely into the tank from the formation. A fence to restrict animal movement in the spring area and a diversion ditch uphill from the spring to divert surface run-off are considered basic to the protection of the spring from surface pollutants.



The tank cover must be cast in place to ensure a good fit. The cover must extend over the top edge of the tank by at least two inches and must be heavy enough so it can not be dislodged by children. Provision to lock the cover in place gives added protection.

A drain pipe with an exterior valve should be placed close to the wall and near the bottom of the tank. The pipe must extend horizontally so as to clear normal ground surface by at least six inches. The discharge end of the pipe must be screened to prevent the entrance of rodents and insects. An overflow pipe should be located near the maximum water level of the tank. This pipe must also be screened.

If you must use a spring water source, you must have the proper Water Right documents from the Washington State Department of Ecology. Application forms are available at our office. Continuous disinfection, as described below for surface water sources, is highly recommended.

## **USE OF SURFACE WATER**

The use of surface water as a drinking water source exposes you to health risks beyond those associated with ground water. This is because you cannot control what is added to the water upstream from your withdrawal point. Also, the water is not filtered by passing through the ground. However, if there is no other feasible source of water you may need to utilize a lake or stream. If this is the case, you will need to install equipment to provide continuous disinfection of the water. The most commonly used types of disinfection equipment are filters, ultraviolet lights and chlorinators. These will remove most bacteria and viruses that can cause water borne disease. However, you should be aware that such equipment is designed to remove the protozoan cysts (Giardia, Cryptosporidia) that are sometimes associated with surface-water borne diseases. Although the water will be considered adequate as a supply for the new home, it should not be considered safe from these disease organisms. We highly recommend that you consider installing additional equipment designed to remove these organisms.

If you must use a surface water source, you must have the proper Water Right documents from the Washington State Department of Ecology. Application forms are available at our office..

## **GETTING YOUR WASTE SYSTEM APPROVED ☐**

In order to obtain a septic system permit the water supply checklist portion of your site evaluation or permit application must be completed. The additional information such as the results of a well pump test or water quality tests must be attached to the checklist. We will be able to process your permit application faster if you submit the information along with the checklist.